ABSTRACT

A method for predicting the state of a geological formation. The method may include generating a separation key effective to extract a first feature from a signal or signals corresponding to a first state and a second feature, distinct from the first feature, from a signal or signals corresponding to a second state. The separation key may list at least one feature operator and a weighting table. The at least one feature operator may expand a test signal collected from a geological formation of unknown state in at least one of frequency space and time space to generate a plurality of feature segments. A weighting table may weight the plurality of feature segments. The weighted plurality of feature segments may be superimposed to form a third feature. The geological formation may be classified as having one of the first state and second state based on the correspondence of the third feature to one of the first feature and second feature.

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